

US010102359B2

# (12) United States Patent

## Cheyer

### (10) Patent No.: US 10,102,359 B2

(45) **Date of Patent:** \*Oct. 16, 2018

## (54) DEVICE ACCESS USING VOICE AUTHENTICATION

- (71) Applicant: Apple Inc., Cupertino, CA (US)
- (72) Inventor: Adam John Cheyer, Oakland, CA (US)
- (73) Assignee: Apple Inc., Cupertino, CA (US)
- (\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 126 days.

This patent is subject to a terminal dis-

claimer.

- (21) Appl. No.: 14/987,580
- (22) Filed: Jan. 4, 2016
- (65) **Prior Publication Data**

US 2016/0119338 A1 Apr. 28, 2016

#### Related U.S. Application Data

- (63) Continuation of application No. 13/053,144, filed on Mar. 21, 2011, now Pat. No. 9,262,612.
- (51) Int. Cl. G06F 21/32 (2013.01) G10L 17/24 (2013.01) H04L 29/06 (2006.01)

#### (56) References Cited

#### U.S. PATENT DOCUMENTS

1,559,320 A 10/1925 Hirsh 2,180,522 A 11/1939 Henne 2,495,222 A 1/1950 Bierig 3,704,345 A 11/1972 Coker et al. (Continued)

#### FOREIGN PATENT DOCUMENTS

CA 2666438 C 6/2013 CH 681573 A5 4/1993 (Continued)

#### OTHER PUBLICATIONS

"Interactive Voice", available at <a href="http://www.helloivee.com/company/">http://www.helloivee.com/company/</a>, retrieved on Feb. 10, 2014, 2 pages.

(Continued)

Primary Examiner — Thaddeus J Plecha (74) Attorney, Agent, or Firm — Dentons US LLP

#### (57) ABSTRACT

A device can be configured to receive speech input from a user. The speech input can include a command for accessing a restricted feature of the device. The speech input can be compared to a voiceprint (e.g., text-independent voiceprint) of the user's voice to authenticate the user to the device. Responsive to successful authentication of the user to the device, the user is allowed access to the restricted feature without the user having to perform additional authentication steps or speaking the command again. If the user is not successfully authenticated to the device, additional authentication steps can be request by the device (e.g., request a password).

#### 20 Claims, 6 Drawing Sheets

